Abstract ID : 446

Title : STRESS STUDIES ON DOLPHINS INVOLVED IN EASTERN TROPICAL PACIFIC OCEAN PURSE-SEINE OPERATIONS

Category : Conservation

Student : Not Applicable

Preferred Format : Oral Presentation

Abstract : The International Dolphin Conservation Program Act (IDCPA), enacted by the U.S. Congress in 1997, required a multi-year research program to investigate whether the eastern tropical Pacific tuna fishery is having an adverse impact on depleted dolphin stocks. One component of these studies was an investigation of potential stress effects in dolphins repeatedly chased and encircled using purse seine methods. During August-October 2001, a suite of complementary studies was conducted on pantropical spotted dolphins (Stenella attenuata attenuata), using a dedicated tuna purse seine vessel. Known collectively as the Chase Encirclement Stress Studies (CHESS), the investigations included analyses of blood constituents, immune function, thermal condition, behavioral ecology, reproductive parameters, set-associated behavior, and stress-response protein profiles in spotted dolphin skin. Dolphins were captured by the purse seine vessel, sampled, tagged, and then released. Over the course of the next 1-8 days, dolphins were radio-tracked and recaptured for follow-up sampling. Although the dynamic nature of dolphin herds limited the number of recaptured dolphins, several lines of investigation revealed the expected acute stress response following chase and capture. Eight blood constituents showed significant differences ($p<0.05$) between non-overlapping first capture ($n=50$) and recapture ($n=10$) samples. Changes observed in circulating adrenal hormones were consistent with the results of concurrent histopathological studies in dolphins sampled by observers in the tuna fishery. In that study, focal heart lesions were observed as evidence of prior tissue damage in 36% of the individuals. These lesions are the likely consequence of stress responses that may or may not have been fishery related. Considered together and in combination with other IDCPA studies, the CHESS investigations have provided new baseline data on stress processes in pelagic dolphins; however, there is insufficient evidence to establish whether or not repeated chase and encirclement leads to serious injury, negative effects on reproduction, or cryptic post-release mortality.